National Institute of Environmental Health Sciences

Seasonal variation in the incidence of preeclampsia and eclampsia in tropical climatic conditions

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Abstract:

BACKGROUND: Observational studies have demonstrated various correlations between hypertensive disorders of pregnancy and different weather parameters. We aim to study if a correlation exists between the incidence of eclampsia and pre-eclampsia and various weather parameters in the tropical coastal city of Mumbai which has the distinction of having relatively uniform meteorological variables all throughout the year, except for the monsoon season. METHODS: We retrospectively analysed data from a large maternity centre in Mumbai, India over a period of 36 months from March 1993 to February 1996, recording the incidence of preeclampsia and eclampsia. Meteorological data was acquired from the regional meteorological centre recording the monthly average temperature, humidity, barometric pressure and rainfall during the study period. Study period was then divided into two climate conditions: monsoon season (June to August) and dry season September to May. The incidence of preeclampsia and eclampsia and the meteorological differences between the two seasons were compared. RESULTS: Over a 36-month period, a total of 29562 deliveries were recorded, of which 1238 patients developed preeclampsia (4.18%) and 34 developed eclampsia (0.11%). The incidence of preeclampsia did not differ between the monsoon and the dry season (4.3% vs. 4.15%, p Euro Surveillance (Bulletin Europeen Sur Les Maladies Transmissibles; European Communicable Disease Bulletin) 0.5). The incidence of eclampsia was significantly higher in the monsoon (0.2% vs. 0.08%, p Euro Surveillance (Bulletin Europeen Sur Les Maladies Transmissibles; European Communicable Disease Bulletin) 0.01). The monsoon was significantly cooler (median maximum temperature 30.7 degrees C vs. 32.3 degrees C, p Euro Surveillance (Bulletin Europeen Sur Les Maladies Transmissibles; European Communicable Disease Bulletin) 0.01), more humid (median relative humidity 85% vs. 70%, p Euro Surveillance (Bulletin Europeen Sur Les Maladies Transmissibles; European Communicable Disease Bulletin) 0.0008), and received higher rainfall (median 504.9 mm vs. 0.3 mm, p Euro Surveillance (Bulletin Europeen Sur Les Maladies Transmissibles; European Communicable Disease Bulletin) 0.0002) than the rest of the year. The median barometric pressure (1005 mb) during the monsoon season was significantly lower than the rest of the year (1012 mb, $p < 0.0001$). CONCLUSION: In the tropical climate of Mumbai, the incidence of eclampsia is significantly higher in monsoon, when the weather is cooler and humid with a lower barometric pressure than the rest of the year. This effect is not seen with preeclampsia. This strengthens the association of low temperature and high humidity with triggering of eclampsia.

Source: http://www.ncbi.nlm.nih.gov/pmc/articles/PMC2169212

Resource Description

Exposure :

weather or climate related pathway by which climate change affects health

Extreme Weather Event, Meteorological Factors, Meteorological Factors, Precipitation, Temperature

Extreme Weather Event: Drought, Flooding

Geographic Feature:

resource focuses on specific type of geography

Ocean/Coastal, Tropical

Geographic Location:

resource focuses on specific location

Non-United States

Non-United States: Asia

Asian Region/Country: India

Health Impact:

specification of health effect or disease related to climate change exposure

Developmental Effect

Developmental Effect: Reproductive

Mitigation/Adaptation:

mitigation or adaptation strategy is a focus of resource

Adaptation

Population of Concern: A focus of content

Population of Concern:

populations at particular risk or vulnerability to climate change impacts

Pregnant Women

Resource Type:

format or standard characteristic of resource

Research Article

Timescale:

time period studied

Time Scale Unspecified

Vulnerability/Impact Assessment:

resource focus on process of identifying, quantifying, and prioritizing vulnerabilities in a system

A focus of content